

What is claimed is:

1. Apparatus comprising:
a control point processor;
an interface device operatively connected to said control point processor and
having:
a semiconductor substrate;
a plurality of interface processors formed on said substrate, the number of
said processors being at least five;
internal instruction memory formed on said substrate and storing instructions
accessibly to said interface processors;
internal data memory formed on said substrate and storing data passing
through said device accessibly to said interface processors; and
a plurality of input/output ports formed on said substrate;
at least one of said input/output ports connecting said internal data
memory with external data memory;
at least two other of said input/output ports exchanging data passing
through the interface device with an external network under the
direction of said interface processors;
said control point processor cooperating with said interface device by loading into
said instruction memory instructions to be executed by said interface processors in
directing the exchange of data between said data exchange input/output ports and the flow
of data through said data memory.

2. Apparatus according to Claim 1 further comprising:
a second interface device operatively connected to said control point processor and
having:
a semiconductor substrate;

a plurality of interface processors formed on said substrate, the number of said processors being at least five;
internal instruction memory formed on said substrate and storing instructions accessibly to said interface processors;
internal data memory formed on said substrate and storing data passing through said device accessibly to said interface processors; and
a plurality of input/output ports formed on said substrate;

at least one of said input/output ports connecting said internal data memory with external data memory;

at least two other of said input/output ports exchanging data passing through the interface device with an external network under the direction of said interface processors;

said control point processor cooperating with said second interface device by loading into said instruction memory instructions to be executed by said interface processors in directing the exchange of data between said data exchange input/output ports and the flow of data through said data memory.

3. Apparatus according to Claim 1 further comprising
a second control point processor;

said interface device being operatively connected to one of said control point processor and said second control point processor;

a second interface device operatively connected to the other of said control point processor and said second control point processor and having:

a semiconductor substrate;

a plurality of interface processors formed on said substrate, the number of said processors being at least five;

internal instruction memory formed on said substrate and storing instructions accessibly to said interface processors;

internal data memory formed on said substrate and storing data passing

through said device accessibly to said interface processors; and
a plurality of input/output ports formed on said substrate;

at least one of said input/output ports connecting said internal data
memory with external data memory;

at least two other of said input/output ports exchanging data passing
through the interface device with an external network under the
direction of said interface processors;

said other control point processor cooperating with said second interface device by
loading into said instruction memory instructions to be executed by said interface
processors in directing the exchange of data between said data exchange input/output
ports and the flow of data through said data memory.

4. Apparatus according to Claim 1 wherein said control point processor is located
remotely from said interface device and is operatively connected thereto through said two
other input/output ports.

5. Apparatus comprising:

a housing;

a backplane mounted in the housing;

a plurality of printed circuit board devices mounted in said backplane;

circuit elements on one of said circuit board devices comprising:

a control point processor;

a semiconductor substrate;

an interface device operatively connected to said control point processor and
having:

a plurality of interface processors formed on said substrate, the
number of said processors being at least five;

internal instruction memory formed on said substrate and storing

instructions accessibly to said interface processors;
internal data memory formed on said substrate and storing data
passing through said device accessibly to said interface processors;
and
a plurality of input/output ports formed on said substrate;
at least one of said input/output ports connecting said internal
data memory with external data memory;
at least two other of said input/output ports exchanging data
passing through the interface device with an external network
under the direction of said interface processors;
said control point processor cooperating with said interface device by loading
into said instruction memory instructions to be executed by said interface
processors in directing the exchange of data between said data exchange
input/output ports and the flow of data through said data memory.

6. Apparatus according to Claim 5 wherein said control point processor is formed on
said semiconductor substrate.

7. Apparatus according to Claim 5 further comprising:
circuit elements on a second of said circuit board devices comprising:
an interface device operatively connected to said control point processor and
having:
a semiconductor substrate;
a plurality of interface processors formed on said substrate, the
number of said processors being at least five;
internal instruction memory formed on said substrate and storing
instructions accessibly to said interface processors;

internal data memory formed on said substrate and storing data passing through said device accessibly to said interface processors; and

a plurality of input/output ports formed on said substrate;

at least one of said input/output ports connecting said internal data memory with external data memory;

at least two other of said input/output ports exchanging data passing through the interface device with an external network under the direction of said interface processors;

said control point processor cooperating with said interface device by loading into said instruction memory instructions to be executed by said interface processors in directing the exchange of data between said data exchange input/output ports and the flow of data through said data memory.

8. Apparatus comprising:

a printed circuit board device; and

circuit elements mounted on said circuit board device comprising:

a control point processor; and

an interface device operatively connected to said control point processor and having:

a semiconductor substrate;

a plurality of interface processors formed on said substrate, the number of said processors being at least five;

internal instruction memory formed on said substrate and storing instructions accessibly to said interface processors;

internal data memory formed on said substrate and storing data passing through said device accessibly to said interface processors;

and

a plurality of input/output ports formed on said substrate;
 at least one of said input/output ports connecting said internal
 data memory with external data memory;
 at least two other of said input/output ports exchanging data
 passing through the interface device with an external network
 under the direction of said interface processors;
 said control point processor cooperating with said interface device by loading
 into said instruction memory instructions to be executed by said interface
 processors in directing the exchange of data between said data exchange
 input/output ports and the flow of data through said data memory.

9. Apparatus comprising:

a printed circuit board device; and

circuit elements mounted on said circuit board device comprising:

a control point processor;

an interface device operatively connected to said control point processor and
 having:

a semiconductor substrate;

a plurality of interface processors formed on said substrate, the
 number of said processors being at least five;

internal instruction memory formed on said substrate and storing
 instructions accessibly to said interface processors;

internal data memory formed on said substrate and storing data
 passing through said device accessibly to said interface processors;

and

a plurality of input/output ports formed on said substrate;

at least one of said input/output ports connecting said internal
 data memory with external data memory;

at least two other of said input/output ports exchanging data

passing through the interface device with an external network
under the direction of said interface processors;

said control point processor cooperating with said interface device by loading
into said instruction memory instructions to be executed by said interface
processors in directing the exchange of data between said data exchange
input/output ports and the flow of data through said data memory; and

a self routing switching fabric device operatively connected to said interface
device and directing data inbound to the apparatus from identifiable addresses to
flow outbound from the apparatus to identified addresses.

10. A method comprising the steps of:

storing in an instruction memory instructions for the handling of data transiting an
interface device;

executing in a plurality of interface processors the instructions stored in the
instruction memory;

receiving a data flow inbound through an input port;

communicating the data flow through the plurality of interface processors; and

directing the data flow outbound through an output port in accordance with the
execution of the instructions by the interface processors.

11. A method according to Claim 10 further comprising parsing the data flow into a
plurality of portions, storing selected portions of the parsed data flow in data memory, and
directing other selected portions of the parsed data flow to a switching fabric for
determination of an outbound direction.

12. A method according to Claim 11 further comprising recombining the stored and
other selected portions of the data flow prior to direction of the data flow outbound through
an output port.

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